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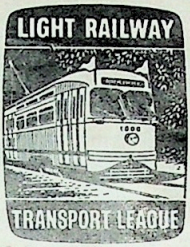

The Truth about Tramways and Light Railways.

SOME QUESTIONS AND ANSWERS

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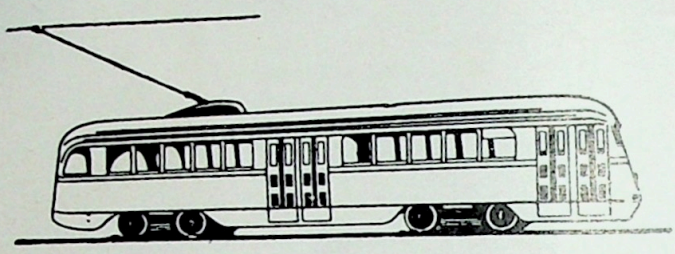

SOME QUESTIONS AND ANSWERS

1.—What is a tram?

The words "tram" and "tramway" have been in our language for a long time and have been adopted by most other languages throughout the world. The original meaning of "tram" was a beam of wood, apparently referring to primitive wooden rails. In modern usage, trams are railborne passenger vehicles whose tracks may be laid between the dual carriageways of roadways, at the side of single carriageway roads, in specially constructed subways, or, where space does not permit segregation, in the street itself. The tramcar is equally at home on paved tracks in urban streets or on ballasted sleeper tracks in open country. In this manner, the tramcar is a remarkably flexible vehicle.

2.—What is a light railway?

This is not so easy to answer as there are several interpretations. In Britain, the legal differences which characterise light railways as distinct from main line railways are the absence of fencing and signalling and the ability to operate with unguarded level crossings. But this is not quite what we mean, for the light railway has certain other qualities which distinguish it from its heavy main line contemporary. Light railway vehicles have a remarkable ability to penetrate to the business centre of a town, whereas the conventional railway erects an enormous station at a peripheral point and requires transhipment of its passengers to another form of public transport to reach the centre. Light railways frequently have the character of main line railways outside the urban areas, but they assume the character of street tramways if they cannot reach their objective in any other way.

3.—It seems to me that there is very little difference between tramways and light railways. Is this true?

This is a very good question, and if you look around the world for examples, a very complicated one too. Blackpool has an example of a light railway (from Fleetwood to Starr Gate) served exclusively by tramcars, and having little railway character. At Cologne, in Germany, you can see four-car trains of the Cologne-Bonn line running along the street and looking rather like main line trains that have lost their way. Here, even the city tramways, until recently, used to run locomotive-hauled tramcar trains through the streets. Switzerland has many light railways which share the roadway or use their own tracks according to local conditions. On the other hand, Boston, in the U.S.A., is converting suburban railways into suburban light railways by linking them with the tramway system and operating them by coupled cars. Cleveland has a suburban rapid-transit railway which shares tracks and stations with the tramcars of the Shaker Heights line. So you will see that there is a gradual merging between tramways and light railways, and even between light railways and main line railways, and the boundaries between these conceptions are best fixed by local conditions.

4.—When were trams invented?

There have been tramways of a sort for carrying minerals, especially coal, ever since the time of Queen Elizabeth I, but passenger tramways as we know them seem to have originated in America about 1832. They reached Britain about 30 years later and developed rapidly. Early lines were horse-drawn, but later steam and cable traction were introduced; electricity followed about the turn of the century and is now almost universal.

5.—Why were trams introduced?

In the first instance, early roads were so bad that even the crudest form of rail offered an advantage. Until the first World War the tramcar developed more rapidly than the motor bus; now, despite the enormous developments in road vehicles carried out to meet the needs of two world wars, railborne vehicles still give smoother travel than pneumatic-tyred road vehicles. It is also still a fundamental fact that less power is needed to move a railborne vehicle than an omnibus of equivalent weight on a road, and this is but one of the inherent advantages of rail transport.

—Then tramways and light railways ought to be less costly than transport other methods?

Yes, provided that the available traffic justifies the capital expenditure on rails and other fixed equipment. This expenditure is heavy, but provided the economies of tram transport are greater than the interest and maintenance charges on the track, then tramways are obviously cheaper to run than buses.

7.—Have the economies you claim for tramways actually been achieved?

Yes, almost invariably so. Tramcars have a tradition of supplying cheap transport, and perhaps this has been a cause of their downfall in some places. Tramcars in Britain offered facilities to poorly paid workmen which could not possibly have been equalled by other vehicles, and the emancipation of the workman seems to have been accompanied by a revulsion against the workman's traditional transport. It is a remarkable fact that tramway facilities have rarely survived the trams where these have been replaced by other vehicles, and that fare "equalisation" has usually followed such conversions. We are speaking now of the old tramcars whose life was so long that they were maintained in service long after they had reached obsolescence.

8.—Do these advantages still exist today? What about fares, for instance?

Not only can increased efficiency be obtained by running on rails, but many more passengers can be carried on railborne vehicles per member of the operating staff. Railborne vehicles can haul trailers so that three or four men can handle the same number of passengers as can eight men on buses. The path of railborne vehicles is predictable, and this enables modern double-articulated cars with a crew of two to carry 200 passengers. No wonder that tram fares are low. It is just as true now as it has ever been that low fares are associated with the operation of tramways.

9.—I don't see how you can claim that railborne vehicles ride more smoothly than buses. I can remember many towns where the trams were lurching and swaying "old crocks." Surely a bus is better?

You don't add that you were comparing a tram from the turn of the century with a modern bus. It is an unfortunate asset of the bus that it wears out so quickly that buses always seem to be modern, whereas trams are so well built that operators were content to run them on minimum maintenance with the results you describe. Have you ever travelled on an old, badly maintained bus? If so, you have experienced something which should be comparable with, if not worse than, your "old crock." There are, of course, modern trams, but you may have to look for them; for one thing they are silent enough for you not to hear them coming. Perhaps you would be interested to hear what Mr. D. H. Eakins, the Chief Engineer of the Melbourne Transport undertaking, had to say after his world tour. He found that his worst tram ride (at Berkeley, California) was not as bad as a ride over cobbled streets in an Edinburgh bus, and this was in 1957. So please do compare contemporaries, and see if you would prefer a 1925 motor bus to a 1925 tramcar. Fair enough?

10.—But trams are obsolete now. Anyone can see that. How can you disagree?

Unfortunately in some places this seems to be true, but this is far from a universal truth. In fact, we can tell you of places where trams are actively replacing buses. Take a look at Oslo or Gothenburg if you want to see the *modern* tram or light railway in the ascendant. Sample their public transport and then come home to your motor buses and see which you prefer. That would be a real test. In many large towns throughout the world you will find the dense basic traffic handled exclusively by modern tramcars. They are comfortable, fast and smooth-running, and they do their job more efficiently than buses or trolleybuses. How can the principle of the tramcar be obsolete when it is so successful in so many places?

11.—I suppose things are different abroad. But I hear that Stockholm has closed several suburban tram routes, and that Hamburg contemplates closing some busy routes. How does this tie with your explanation?

Your statement is correct, and yet so is our previous answer. The tram routes you speak of were closed (or will be closed) for a very different reason. They were unable to handle the traffic and are being replaced by underground railways. Rail is being replaced by rail, not by buses, because of the ability of big, heavy trains to carry more passengers more economically than tramcars. This is only an extension of our earlier argument that, *provided the traffic is sufficiently heavy,* upgrading from tram to train is just as logical as upgrading from bus to tram. If traffic is so dense that the trams cannot handle it, the train is the obvious solution. Such cases are, however, rare, and the converse as at Boston is more likely to set the future pattern.

12.—I will concede you that a modern railed vehicle does its job quite well. But, surely the cars and tracks are an obstruction to traffic flow; wouldn't the more flexible bus be better?

Let's get it quite straight first of all that we don't advocate street tracks unless no alternative is possible. We believe in segregating public and private vehicles to their mutual advantage. If, however, tracks have to be laid in the road, remember that trams occupy less road space per passenger than any other vehicle. Is that an obstruction? If by laying rails you occupy the lowest possible road area, you are freeing space for private cars.

13.—But surely a tram is more obstructive than a bus?

Not necessarily. For one thing, other road users can predict the path of a tram, for the rails are there for all to see. By setting down and picking up at centrally situated loading islands, the tram avoids the

highly obstructive movements in to and out from the kerb at stops that are inevitable with buses. The superior acceleration of a tramcar enables it to get away from stops much more easily than any other vehicle. If you claim that the use of central loading islands is obstructive, you should pay a visit to Zürich in Switzerland. Here, where certain roads have trams, trolleybuses and motor buses, all stop on the tram tracks in the centre of the road to use the loading islands. You will find that such apparently heretical practices contribute materially to smooth traffic flow.

14.—But the tram still cannot get out of the way of other traffic. You cannot deny this, surely?

You are still sticking firmly to your memories of lurching and swaying "old crocks." Modern tramcars have surprisingly good performance potentialities and even some of the better old ones are capable of remarkable turns of speed. A visit to Brussels would be most instructive to you, for there you will hear the tram drivers "gonging" slower moving motorists out of their path. The street sections of tramway in Brussels are remarkable for the discipline of the traffic flow due entirely to the driving skill of the motormen. The trams actually speed up the traffic movement.

The inability of a tramcar to swerve sideways is a double-edged feature, for while a tram cannot get out of the way of other traffic, at least the other traffic can overtake it on both sides without risk of it cutting-in on them. The predictability of the path of a tramcar is a great contribution to safety.

15.—But are not traffic experts in agreement that trams are a nuisance on the streets, particularly when these are narrow?

How utterly wrong you are. The real traffic experts have reached exactly the opposite conclusions; to give you but one example, the narrow streets of Heidelberg, in Germany, are merely one reason why the trams are being retained in that town. Traffic engineers are not as anti-tram as is popularly imagined to be the case. Strange to say, the tram is in its element in narrow streets where it is able to force the pace of the traffic; it is equally at home on the reserved sleeper tracks laid along wide boulevards where it can speed unhindered. Most criticism of the tram by experts is confined to streets of medium width served by low density tram services; in such streets parked cars cause other traffic to weave in and out, and the turbulent motion clashes with the linear tramcar motion.

If you would like to find out some more about this, you should read 'Street Traffic Flow,' by H. Watson (Chapman & Hall), and some of the books by technical experts published by the Light Railway Transport League. These will help to clear up some misconceptions and show you how economically the tram uses the space it occupies.

16.—But are not motorists very much against trams?

Many motorists tend to forget the existence of public transport. They thereby fail to appreciate that although the private car may numerically outweigh the public transport vehicle on any section of road, the private car riders are a mere fraction of the total public transport riders. If one-tenth of road users occupy nine-tenths of the road space, what right have they to deny the other nine-tenths of the users the remaining one-tenth of road space, for this is what it boils down to in its simplest form. Motorists also may not realise that a tramcar holding 200 passengers occupies little more road space than a bus holding 80-100 (we are here speaking of modern single-deckers in both cases) or three private cars holding altogether about five passengers. If every tramload of 200 passengers were transferred to 120 private cars, the motorist would indeed have something to complain about.
Some motorists are opposed to everything except private cars on the road. We remember how such motorists hailed with glee the removal of the virtual tramway reservation from the Victoria Embankment in London, and we can see how they have used this extra freeway by two solid lines of parked cars all day long; in addition they have to contend with buses moving among their cars. All that they have gained is an unofficial car park at fantastic expense, plus the added obstruction by public transport buses where there formerly were none. However, condemnation of trams by motorists is not as unanimous or universal as the motoring organisations would have us believe. Many experienced motorists prefer to drive in a street where the heavy passenger traffic is segregated into a narrow strip by the use of trams. They appreciate the guaranteed clearance afforded (unless another parked car obstructs it) and the facility of nearside overtaking, not to mention the freedom from large vehicles continually pulling into and out from the kerb in front of them.

17.—Are you against motorists and their interests?

By no means. Every road user should have use of the roads with minimum obstruction, but you must put first things first. The numerically small fleet of public transport vehicles, each representing up to 200 road users in effect, should have prior claim to road space over and above the average one-and-a-half road users in each of the much larger number of cars. The tram, as the most economical user of space deserves some priority above all other traffic, and on the Continent of Europe this is usually permitted by law. We favour segregation of public from private transport to the mutual advantage of both, and if motorists and other road users would only pursue the matter to its logical conclusion, they would realise that we are really on their side.

18.—But have not tramways in Britain been condemned by a Royal Commission as long ago as 1930?

If you count 145 words out of a comprehensive report on all forms of transport as adequate treatment of a vehicle which was then the principal form of public transport in almost every large British city, then the answer is a qualified "Yes." Although this report vaguely indicated that tramways should gradually disappear and give place to other forms of transport, it was not prepared to dispute that trams were necessary in certain large towns if the traffic was to be carried with any degree of expedition. It gave no reason for condemning the tram, and not a single fact or figure to support its opinion.

19.—You mentioned that trams do not pull into and out from the kerb. Surely loading in the middle of the road is a dangerous disadvantage?

When modern tramway systems have to use street track, loading islands are the rule rather than the exception. Passengers on these islands are exposed to no more danger than a bus queue along the kerb. Even in the less satisfactory cases where tramcars have to load from and discharge into the roadway, the provision of safety zones should not expose passengers to any danger.

20.—How do you know that motorists will respect safety zones?

This is best answered by asking you how you know that a motorist will stop for you at a pedestrian crossing. We all have to use pedestrian crossings, and a law-breaking motorist will have as much chance to kill us there as on a tramcar safety zone. So you may as well use one as the other.

21.—I still think central loading and unloading is dangerous. Don't buses draw into the kerb to set passengers on the pavement?

Don't forget what we told you about Zürich in our answer to question No. 13. But apart from this, you must remember that bus passengers discharged on the nearside pavement will not necessarily want that side of the road. In fact half of them will probably have to cross, and most of these will almost certainly risk their life by immediately passing behind the bus and crossing both traffic streams. With trams, all the people have to cross half the road and this means that each passenger has to contend with only one traffic stream. So, even with the worst possible tramway facilities, the average exposure to danger of tram passengers is slightly less than that of bus passengers.

22.—You refer to the "worst possible tramway loading facilities," yet these are the facilities I always associate with trams. Can they be improved?

Most definitely. Progressive tramway operators transfer their tracks to segregated positions away from busy roads wherever possible, while street tracks become temporary reservations at tramway stations. Don't forget that you do not have to narrow the remainder of the carriageway unduly at tramway stations, for modern practice dictates staggering the platforms end-on to keep the reservation as narrow as possible.

23.—To what extent has this been done?

Very extensively in many European countries. In one busy Düsseldorf street, a section of the street where loading and unloading takes place is restricted to tramcars. The replanned centre of Rotterdam abounds with modern loading islands on central reservations, and there are many other examples. Milan is another fine example of well-designed tramway facilities. Unfortunately, this practice was the exception rather that the rule in most British cities.

24.—But are not central loading islands an obstruction?

If this is so, why are central islands considered to be an aid to traffic flow, and why are they so generously provided on almost every road without tramways?

25.—Then trams are not necessarily more dangerous than buses?

Of course not. If you want to do so, you can easily render any form of transport dangerous; those local authorities which did not forbid nearside overtaking of stationary tramcars on street tracks were exposing tram passengers to unnecessary hazards, for example. Despite all this, street tramways have a remarkable and enviable safety record. One London tram depot had the proud record that none of its cars had ever been the guilty party in an accident, while whole systems had amazing safety standards. To quote just one further example, Southend tramways carried 510,000,000 passengers in all the 41 years of their existence without a single fatality.

26.—How have trams managed to achieve such a remarkable safety record?

Once again we emphasise the value of a fixed predictable path. Street users can see and anticipate the movement of tramcars. While the braking capacity of trams is tremendous, a guaranteed skid-free emergency stop can save many lives. On some Continental tram systems, the driver has a notice in front of his control desk to remind him when he brakes that his braking ability is greater than that of following traffic.

We hear a lot about modern private cars being fitted with disc brakes at the end of the 1950's, and much is made of their efficiency. How shocked the motor car owners would be to find that trams anticipated them in the early 1930's, over 15 years earlier, for the P.C.C. car has always relied on disc brakes. It is a traditional feature of British trams that they carry automatic lifeguards, extremely simple mechanical devices which prevent a pedestrian being trapped under the wheels, and they must have saved many lives in their time.

Another favourable feature of street tramway operation is the customary remoteness of the tracks from the pavement so that the pedestrian is not exposed to the slipstream (or worse) of heavy vehicles swooping within inches of crowded footpaths. Reserved tracks are even safer, and their fencing makes them even safer than railways.

27.—But are not the rails themselves a great danger when laid in the streets?

Just as the standard of road surfacing can vary from rough cobbles to smooth tarmac, there are varying standards of track laying and maintenance. Continental cities still tend to have many streets paved with bumpy cobbles and yet beautifully paved tram tracks; here the area around the tram tracks is the section of the road most sought after by motorists. Where city streets are paved with tarmacadam, well maintained tramway track looks as if the adjoining tarmac has been smoothed to rail level with a flat iron. The dropped joints surrounded by displaced stone setts that you associate with tramways are as rare on well maintained systems as they were common on the systems you remember where there was a vested interest in tram-scrapping. After all, if you neglect your trackwork you damage your cars, induce public dislike of trams and thereby make scrapping easier.

Careful cyclists and motorists tell us that they need experience no danger when crossing well-laid street tracks even in wet weather so long as they apply common-sense rules, such as crossing at the correct angle and avoiding violent braking. The latter can cause a skid without any rails at all.

28.—It looks as if proper maintenance of tramway tracks needs a large, skilled staff and continuous vigilance. Are not buses the easy way out?

Yes, you are quite right, and we do not want to qualify our agreement for you have hit on the truth quite inadvertently. Proper maintenance of tramway tracks costs money and effort, and if managements are cheese-paring in either, the standard of service and comfort will fall as a result. Neglect of tracks starts a vicious spiral, and

the cost needed to put things right gets higher and higher, and in the end there is a ready-made excuse for scrapping. Proper study of the facts would show that it was the management and not the tracks which needed renewal under such conditions. Where a management seeks an easy life rather than a strenuous existence, buses are the obvious answer, for running them is second nature to a motor-car owner. Running trams requires special skills, and one can safely say, therefore, that a well-run tramway in good order is a tribute to the attention to detail of the management and engineers.

29.—So much for safety and maintenance; how about comfort?

A well maintained tram on smooth track does not have to damp out all the low-frequency perturbations induced in buses by irregularities in the road surface. You should sample a few badly maintained Continental buses on rounded cobbles, and you will find that their gyratory antics are far worse than the lurching and jolting of the old trams that you complain about. Modern tramcar trucks damp out the high-frequency metallic noises that used to irritate tram passengers, yet even modern buses cannot damp out the vibrations in the body. Remember too that even well maintained ancient four-wheeled single-decker trams with wooden seats can be unexpectedly comfortable on good track. Many supporters of modern trams have been heard to comment on the extraordinarily high quality of the riding of Düsseldorf's elderly three-car trains even compared with their 1960 cars.

30.—I am still not satisfied that, on balance, trams do not cause a good deal of street obstruction. As you say, many of their features "cut both ways," and I agree with you, but on the whole I think that street tramways cause more obstruction than they prevent.

Apart from the special cases we mentioned in our answer to question 15, experts tend to agree that trams without buses, or buses without trams, generally have relatively little effect on traffic flow. On the other hand, the interaction of the two together may be highly disruptive. When fairly dense tram and bus services share the same road, the result is usually chaotic, and it is therefore considered good practice to keep them segregated wherever possible; Glasgow showed a good appreciation of this point. You should not blame the trams where this situation is found, but rather you should blame the so-called planners who permitted the blunder in the first instance. If you investigate the measures taken in towns without tramways to speed up traffic flow, you will find always that these measures tend to enforce discipline similar to that induced by trams. Lane separation and enforcement of lane discipline are the measures always taken, and so segregation, the logical consequence of tramway operation, is established.

31.—But aren't trams terribly slow?

Why should they be slow? Any under-powered vehicle is bound to be slow, whether tram or bus. Since a tramcar of the P.C.C. pattern is designed to operate at the maximum speed consistent with avoiding wheel slip, how can it be inherently slow? The capabilities of tramcars have often been a source of wonder to both designers and operators, and the experience of the Belgian Vicinal Tramways is no exception. They discovered that their very simple two-motor "N" class car was capable of operating the long Brussels-Leuven line to P.C.C. schedules without the slightest difficulty, and were thus able to achieve considerable economies.

Where trams and buses run together, trams tend to carry the dense local traffic while buses carry the light long-distance traffic, and the schedules consequently show the bus as faster because it is doing a lighter job than the tram.

32.—Then again, trams are terribly noisy, aren't they?

You can't separate trams in your mind from the battered old wrecks you remember. Tram motors have no reciprocating parts, and modern truck design uses rubber-encased coil springing to damp out noise. Modern gears are made to mesh silently (though those on your old cars would have done so too if they had been looked after properly), so if the track is smooth where can the noise originate? For noise you must have bad design or maintenance; bad track, wheel "flats," bad gears and so on. Trolleybuses are traditionally silent (to their detriment, sometimes) and modern trams are no noisier.

33.—Isn't it a great disadvantage of trams that if one breaks down everything is held up? A bus can pass round without delay. Isn't this better?

It is true of all kinds of rail vehicle that one cannot pass another on the same track, but it is simply silly to advocate scrapping them for this reason alone. No one advocates scrapping the main line railways or the London Underground because a train occasionally breaks down and causes delay, and we have already referred to the great inherent advantages of transport on rails. After all, a damaged tram can usually be hauled away in a few minutes, and as regards general reliability and freedom from breakdowns, trams have a very good record.

34.—Explain a little more about the "reliability" of trams.

For one thing, a tram is unrivalled in its independence of weather conditions. Rubber-tyred vehicles are severely handicapped when there is rain, snow or ice on the ground, owing to the risk of skidding; but trams cannot skid and are equally safe whatever the condition of the rails. In fog, trams can always carry on longer than any

other vehicle, as they simply follow the track and cannot take a wrong turning. Mechanical breakdowns in trams are rare. A large city operating trams, buses and trolleybuses recorded the following figures for vehicles taken out of service owing to mechanical defects: motor-buses, 2.47; trolleybuses, 3.43; trams, 1.81, per 10,000 vehicle miles run in each case.

35.—You have certainly made out a good case for some sort of vehicle on rails. But isn't it a mistake to mix them up with other traffic on the roads?

One of the advantages of tramways is that it is by no means necessary to "mix them up" with other traffic. The modern tendency is to separate different classes of traffic into "lanes," and with trams this is easy to do, because a lane for trams only requires no paving, and reserved track, fenced off alongside or in the centre of the road, can easily be provided where there is room. This may actually be cheaper to build than a paved tramway, and at the same time it provides an almost ideal method of transport. The trams can run in safety at high speeds; there is no "obstruction" of other traffic, which then has the whole of the road to itself; yet the trams are still close to the road and easily accessible at convenient points.

36.—Have such reserved tracks actually been built?

Yes. On many systems reserved tracks are a common feature. Often these comprise a large proportion of the route mileage, and further conversion to reservation is being undertaken.

37.—But is not a more radical solution necessary? Shall we not have to have underground railways in all cities eventually?

A reserved track tramway *is* an electric railway, yet, unlike the ordinary type of underground railway, it need not be built all at once, at tremendous cost, but can be developed gradually from the existing tramway system. A new underground railway system would need at least several miles to be opened together at an almost prohibitive cost. If we place existing tramways on reserved tracks we achieve the same results eventually—a system of electric railways away from the street—and yet it can be done in sections, retaining through routes all the time. With open reserved tracks in the suburbs, and a few short sections of subway in busy parts where roads cannot be widened (at far less cost than an all-underground line) the aim would be achieved. Once the line was reserved, you could run long, heavy trains; but shorter tram-trains have important advantages so long as the traffic can be handled. You get a more flexible service, freedom from signalling complications, and easy access at wayside stops, yet speed can be high. It is almost an ideal system from every point of view; yet it can all be done by intelligent development of existing tramways, without the waste of capital involved in "scrap-

ping." And it can all be done in easy stages without disturbing existing services; the routes are just diverted from the streets to reserved tracks as gradually as you like whenever opportunuity occurs. This process is actually taking place in a number of cities throughout the world.

38.—Is the usefulness of trams confined to large cities?

Not necessarily. They show up to greatest advantage in populous areas, as these are the kind of places where mass transport, which the tram can provide so efficiently, is needed. Wherever there is sufficient traffic to justify the investment in track and other equipment, the tram can make a good showing. Abroad there are networks of interurban tramways, linking up adjacent towns and villages. There have been such cases in Britain, such as the line from Blackpool to Fleetwood. There are probably many districts, especially along the coast and between neighbouring populous centres, where properly planned interurban tramways could find a useful place.

39.—If tramways have such great possibilities and advantages, how is it that so many have been scrapped in this country?

In the first place, many tramways in this country, owing to oppressive legal and other burdens, never had a fair chance. Many lines were not soundly financed and did not make proper provision for renewals —or their funds were raided for road widening, relief of the rates, or other extraneous purposes. Then, another thing that happened in many towns was that the authorities did not extend existing tram routes to housing estates and other newly developed areas, so that the old tram terminus was left high and dry; the estate had to be catered for by running buses along the same routes in competition with the same authority's trams, and, naturally, costs rose with this dual operation. In effect one good service was turned into two bad ones. The trams, finishing at a point nowhere in particular where no one wanted to go, naturally soon ceased to pay, and then the authority had a ready-made excuse for scrapping them! That, briefly, is the kind of story, especially as it happened in Britain. In many cities in other parts of the world, however, trams have continued to be developed, and they remain the most effective means of urban transport.

40.—Where trams have been scrapped, have the results been generally satisfactory?

There are, of course, a number of towns which can be catered for quite adequately by almost any vehicle, or where, for special local reasons, a rubber-tyred vehicle is actually more suitable than one running on rails, and in such cases scrapping may have turned out quite well. But in cases where a good tram system has been cast aside,

and where really heavy traffic exists which requires a "mass transport" vehicle, several tendencies, far from good, have appeared. In the first place, fares have almost invariably tended to rise upon the substitution of the bus. The fare from Leeds to Guiseley more than doubled when the route was converted to buses. Almost all the cheap fare rates in London, introduced by the L.C.C. trams, were withdrawn with the trams. There are countless instances of a similar nature. Then, accidents have tended to increase. Many tramway systems never had a single fatal accident throughout their career, yet death has followed the "flexible" vehicle. Road surfaces have deteriorated in many places after a few months pounding by heavy buses. Services have become less reliable in bad weather, and headways more erratic. The streets have been pervaded with noxious exhaust fumes—scarcely an improvement after the earlier use of electricity! Then there has often been a rude shock in the form of a heavy increase in the local rates.

41.—What have trams to do with the rates?

A tramway concern is required by law to maintain at its own cost the whole of the road paving between the rails, between the tracks, and for a margin of 18 inches outside. This is generally at least half of the total road surface. When the tramways are abandoned, the whole of the road surface has to be maintained by the local highway authority—that is, by the ratepayers, who are suddenly called on to find at least twice as much as before in respect of paving along the transport routes. At the same time, this paving is worn out much faster by the buses put on to replace the trams.

42.—Is not the trolleybus highly successful, and on the way to becoming the universal replacer of the tram?

We do not deny a place to the trolleybus, which is a very useful vehicle for certain types of service, and has the advantage of using electric power. But it must be remembered that it is essentially a *road* vehicle and thus has none of the distinctive advantages of the tram—the economy, reliability and added safety of *rail* traction, which we have already stressed. The trolleybus can be a useful adjunct to a tramway system as part of an integrated network, but it cannot be considered as a universal tram substitute on the heavily trafficked routes for which the tram is most suited.

43.—Cannot the facts about modern tramways and light railways be made more widely known?

Many thinking people have been trying to do this for some time now. The Light Railway Transport League was founded by a number of people in all walks of life who felt that the tram was not receiving

a fair deal. They have worked to make the true facts known in the public interest. They feel that it is necessary that the " case for the tram" should be properly stated. Already there is a steadily growing feeling in favour of retention, extension and development of modern tramways and light railways; that this feeling exists is shown by the remarkable growth in our membership.

44.—Will not this question be of great importance in connection with the future development of public transport and cities?

Undoubtedly. With the present state of street congestion and concern about the future of public transport, it is becoming increasingly realised that only by the greatest use of public transport can the problem of traffic flow be adequately solved. For this purpose, more attention is being turned to the possibilities of the modern tramway and light railway, often under the title of " Rapid Transit." You should read ' The Future and Rapid Transit,' price 2s. 4d. including postage, obtainable from the address below, for an appreciation of this modern approach to transport problems.

If you feel—as increasing numbers of thoughtful people are doing—that there is "something in it" you can learn more from THE LIGHT RAILWAY TRANSPORT LEAGUE (advocating tramway and light railway development), 245, Cricklewood Broadway, London, N.W.2—neither an "anti" society, nor a commercial organisation, but an association of voluntary workers anxious to see modern tramways and light railways treated fairly on their true merits, and adequately developed side by side with other methods of transport, each where it is best suited to local conditions. The League publishes an illustrated monthly magazine, 'THE MODERN TRAMWAY,' and other books on the subject; holds regular meetings; has comprehensive information services; and is affiliated with similar societies in other countries. Enquiries are welcomed.

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